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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/500,716
Filing Date: July 06, 2004
Appellant(s): ELLIN ET AL.

James A. Oliff and Scott M. Schulte
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed August 25, 2008 appealing from the Office action mailed March 13, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

Applicant's Admitted Prior Art (AAPA) described in the Specification at pages 1 and 2.

DE019608937A1, Germany, September 12, 1996

6,156,030	Neev	12-2000

20030015672 A1	Gallagher	01-2003
5,736,709	Neiheisel	04-1998

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-14, 19-32, 42, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of DE019608937A1 in view of USPN 6,156,030 to Neev.

With respect to (WRT) claims 1-14, 19-32, 42, and 43:

AAPA describes (Specification pages 1 and 2) known production of measurement scale using a laser, use of a reference to correct deficiencies, marking perpendicular to the laser travel direction, and known laser solid to gaseous state ablation performed at below 4 picoseconds pulse length. AAPA does not describe forming a scale by laser ablation (direct solid to vapor phase transition).

DE019608937A1 describes (Abstract) use of a laser to form scale markings. The laser removes material (Figure 1) and the markings can be oriented as ruler markings (Figure 3, TS33).

Neev describes (Title, Abstract) material removal by ablation and describe pulses which last approximately 1 picosecond in duration.

As opposed to a solid to liquid to vapor transition, ablation inputs less heat to the substrate because of the direct solid to vapor phase transition. The use of a low thermal transfer to the workpiece by performing ultra-short pulse laser ablation would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art in order to minimize the heat affected zone (HAZ) and thereby reduce product defects.

WRT claims 2 and 20, ultra short pulse laser ablation controls bulk temperature rise and would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art depending on the workpiece materials.

WRT claims 3, 5, 6, 21, 23, and 24, surface roughness due to laser ablation contrasts optically with an unablated surface.

WRT claims 4 and 22, material property feature would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art depending on the workpiece materials.

WRT claims 7-11 and 25-29, size and shape limitations are a change in degree, but not a change in kind with respect to prior art scales.

WRT claims 12 and 30, continuous displacement is encompassed by Neev's movement in a predetermined manner.

WRT claims 13, 14, 31, and 32, the factor would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art as being a change in degree.

WRT claims 42 and 43, Neev discloses a laser capable of pulse duration less than 4 picoseconds.

Claims 15-17 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of DE019608937A1 in view of USPN 6,156,030 to Neev as applied to claims 1 and 19 above, and further in view of US20030015672A1 to Gallagher.

Displacement is described by Gallagher [0071] and the use thereof in displacement for laser ablation of marks would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because automated movement control provides controlled regular ablation.

Claims 18 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of DE019608937A1 in view of USPN

6,156,030 to Neev as applied to claims 1 and 19 above, and further in view of USPN 5,736,709 to Neiheisel.

Neiheisel describes laser ablation and shows (Figure 10b) the well known elliptical spot. The elliptical spot would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because it provides a narrower profile for precision shaped etching.

(10) Response to Argument

Applicant refers to KSR. This argument is not convincing. Scope of the prior art pertains to modification of substrates by laser ablation. Differences pertain to use of ultra short laser pulse laser for ablation, but the use of an ultra short pulse is well known in the art. Level of ordinary skill in the art comprises knowledge of metrological scale fabrication using laser ablation and comprises knowledge of ultra short pulse lasers. Secondary considerations do not overcome the obviousness of using a known laser which inputs less heat into a substrate during marking because less heat input to a workpiece causes less change to the workpiece.

Applicant argues that "None of the applied references disclose or suggest a method or an apparatus that combines both a metrological scale and ultra-short output pulses that are used to form precision markings". This argument is not convincing. Neev describes (column 1, lines 16-26) "pulsed electromagnetic energy source systems suitable for material and biological tissue modification processing and removal", and Neev describes (column 60, lines 17-21) well known use of ultrashort pulse laser ablation. The ablation is vaporization of the solid without a melting step.

DE019608937A1 describes (Translation, page 3, last two paragraphs) "With the use of high-energy radiation, the highly-reflective surface of a layer T1 that can be used to make a tag is partially roughened" and further describe (page 4, lines 2-4) "In order to prevent energy dissipation from the processing area during the duration of the laser pulse, pulses of a clearly shorter duration can be used." The use of the ultra-short pulse laser ablation, with no melting step, for forming precision markings would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art in order to provide marks and prevent energy dissipation into the workpiece because preventing the dissipation of energy into the workpiece prevents physical change of the substrate.

Applicant argues that Neev is non-analogous art. This argument is not convincing. As described above, Neev pertains to laser ablation of material. Note the classification of Neev in both class 606 (Surgery) and in class 219 (Electric Heating). Subclasses 121.6 and 121.61 are laser treatment of workpieces which fall under subclass 50, Metal Heating.

Applicant argues that Neev was picked by the Examiner as a result of hindsight reasoning. This argument is not convincing. Neev pertains to well known material modification processing and removal comprising laser ablation.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Samuel M Heinrich/

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